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The time period for reply, if any, is set in the attached communication.

DETAILED ACTION

Status of Claims

Claims 1-19 are remained for examination. Claims 1 and 2 are amended.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 2003/0122111).

Regarding claim 1, Glatkowski '111 discloses an electrically conductive dispersion comprising of wrapped SWNTs. It may further comprise additives such as surfactant ([0061]), polymer (PVP) and NMP ([0048], [0049], [0088], claim 1 and 23).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify (substitute, add or omit) the composition of Glatkowski, including as the instantly claimed, based on the desired features of the products and operating conditions ([0133]-[0136]).

Claim 1, 3-5, 8, 10-12, 14, 16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 2003/0122111) in view of Zhang et al. (US 2005/0025694).

Regarding claim 1, although the composition taught by Glatkowski et al. may have the SWNTs ([0038]), NMP ([0047]), and a surfactant ([0061], [0131]), Glatkowski et al. does not specifically teach using a nonionic surfactant as the instant claim. Zhang et al et al. discloses a method of preparing stable nanotubes dispersions liquid using surfactant(s). Zhang et al further points out the preferably surfactants are nonionic surfactants (such as nonylphenoxypoly-(etheneoxy) ethano-type surfactant), or a mixture of nonionics and ionics ([0022]-[0042], and [0075]-[0078], claims 8 and 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the anionic surfactant of Glatkowski with a nonionic surfactant (such as nonylphenoxypoly-(ethyleneoxy) of Zhang, as it not only can contain more carbon nanotubes used for producing the electrically conductive film, it generates a uniformly and stable carbon nanotube dispersion in liquid. Because both teach are well recognized compositions, and would have a reasonable expectation of success. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Regarding claims 3, 8, and 10, as discussed above, Glatkowski et al. discloses an electrically conductive dispersion comprising of polymer (PVP) wrapped SWNTs, and NMP ([0047], [0048], [0049], [0088]). It may further comprise a surfactant ([0061]).

Regarding claims 4-5, Zhang et al et al. discloses a method of preparing stable nanotubes dispersions liquid containing up to 30% of nonionic surfactant (nonylphenoxypoly-(ethyleneoxy) ethanol), Which overlaps the instant claimed ([0077]).

Regarding claim 11, Glatkowski discloses the nanotubes in the film are oriented and have an outer diameter of less than 3.5 nm (0.0035 um), which have the shorter wave of visible light so as not to absorb visible light, and to reduce scattering of the visible light (claim 35 and [0006]).

Regarding claim 12, Glatkowski discloses a method preparation of the film comprising steps of dispersing SWNTs and PVP in NMP solution, followed by sonication and filtration ([0088], [0131]).

Regarding claims 14, 16 and 19, Glatkowski '111 discloses a method preparation of films by addition of the PVP coated SWNTs, which are generated by suspended SWNTs in surfactant (which can be substituted with Zhang's nonionic surfactant as discussed above) and PVP, to the dispersant/NMP solution, followed by sonication, and then filtration as instantly claimed ([0131], [0088]).

Claims 2 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Glatkowski et al. (US 2003/0122111) in view of Zhang et al. (US 2005/0025694).

As discussed above, although the composition taught by Glatkowski et al. may have the SWNTs ([0038]), NMP ([0047]), and a surfactant ([0061], [0131]), Glatkowski et al. does not specifically teach using a nonionic surfactant as the instant claim. Zhang et al et al. discloses a method of preparing stable nanotubes dispersions liquid using surfactant(s). Zhang et al further points out the preferably surfactants are nonionic surfactants (such as nonylphenoxypoly-(etheneoxy) ethano-type surfactant), or a mixture of nonionics and ionics ([0022]-[0042], and [0075]-[0078], claims 8 and 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the anionic surfactant of Glatkowski with a nonionic surfactant (such as nonylphenoxypoly-(ethyleneoxy) of Zhang, as it not only can contain more carbon nanotubes used for producing the electrically conductive film, it generates a uniformly and stable carbon nanotube dispersion in liquid. Because both teach are well recognized compositions, and would have a reasonable expectation of success. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Claims 1, 3-5, 6-10, 12-13, 14-17are rejected under 35 U.S.C.103 (a) as being unpatentable over Smalley et al. (US 2002/0046872) in view of Zhang et al. (US 2005/0025694).

Regarding claim 1, 3-4, and 8, Smalley '872 discloses a dielectric material dispersion comprising of polymer (PVP) ([0076]), wrapped SWNTs ([0076]), dielectric materials, and NMP ([0064] and [0076]). Optionally, the dispersion liquid may further comprise a polymer surfactant ([0046], [0048], and [0057]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify (substitute, add or omit) the composition of Smalley, including as the instantly claimed, based on the desired features of the products and operating conditions. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

It is position of the Examiner to interpret "a polymer surfactant" taught by Smalley including a nonionic surfactant such as polyoxyethylene as the instant claim.

Regarding claim 5, although Smalley et al. does not specifically disclose how much the polyoxyethylene (as a surfactant) is included in the composition, it would have been obvious to one of ordinary skill in the art at the time invention was made to routinely optimize the composition of Smalley, in order to achieve a uniformly dispersing of carbon nanotube in the NMP. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Regarding claims 6- 7, Smalley '872 discloses 1% of PVP used in the invention have a molecular weight 50 KD, which encompasses the instantly claimed (20, 000 to 5,000,000) ([0062]).

Regarding claims 9-10, 12-17, Smalley '872 discloses a method preparation of SWNTs dispersion liquid comprising of mixing nanotubes, NMP and surfactant with PVP, followed by sonication, and filtered through a 1um polycarbonate filter to obtain the fine carbon nanotubes ([0064], [0076]).

Response to Arguments

Applicant's arguments filed on October 24, 2008 have been considered.

Regarding claims 1-3, 8, 10-12, and 18 rejected under 35 U.S.C.102 (b) as being anticipated by Glatkowski et al. (US 2003/0122111), the amendments of the language of claims 1 and 2 to "consisting of" overcome the rejections.

Regarding claims 1-3, 6-9, 12-13, 15, and 17-18 rejected under 35 U.S.C.102 (b) as being anticipated by Smalley et al. (US 2002/0046872), the arguments overcome the rejections.

Regarding claims 1-5, 14, 16, and 19 rejected under 35 U.S.C.103 (a) as unpatentable over Glatkowski et al. (US 2003/0122111) in view of Zhang et al. (US 2005/0025694), the Applicant argues that the prior art reference or combination of references do not teach or suggest all of the limitations of the claims.

Regarding independent claims 1, 2, and 14 as set forth in the first office action, both Glatkowski et al. and Zhang et al. teach compositions containing carbon nanotubes and methods of making of carbon nanotube dispersions in liquids (Titles and Abstracts).

Glatkowski et al. discloses the composition which can increases the concentration of SWNTs almost 50% in the conductive layer. The composition may further contain a surfactant, i.e. sodium dodecy sulfate (SDS, an anionic surfactant) ([0131]).

In the same line of work for making a uniformly and stable carbon nanotube dispersion liquids, Zhang et al further points out the preferably surfactants are nonionic surfactants (such as nonylphenoxypoly-(etheneoxy) ethano-type surfactant), or a mixture of nonionics and ionics ([0022]-[0042], and [0075]-[0078], claims 8 and 11).

Therefore, the Examiner combines Glatkowski and Zhang's compositions together to illustrate the obviousness of substitution the anionic surfactant of Glatkowski with a nonionic surfactant (such as nonylphenoxypoly-(ethyleneoxy) of Zhang, as it not

only can contain more carbon nanotubes used for producing the electrically conductive film, it generates a uniformly and stable carbon nanotube dispersion in liquid. Because both teach are well recognized compositions, and would have a reasonable expectation of success. Therefore, the invention as a whole would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

For the same reason, rejections for the dependant claims 3-5, 16 and 19 stand.

Regarding claim 12, applicants argue additional steps (such as incubation period of 12 hours at 50^0C) are involved in the method of Glatkowski et al. The Examiner respective submits that the preparation method taught by Glatkowski et al comprises the steps of mixing and dispersing SWNTs in NMP/PVP under sonication, so it meets the criteria of the instantly claimed ([0064], [0088], and [0131]). Therefore, the rejection is remained.

In addition regarding claim 12, Smalley et al. teaches a method of preparing a stable suspension of SWNTs by sonicating (mixing and dispersing) carbon nanotubes in NMP or DMF/ PVP solution ([0064], and Experimental Section of Liu, et al, Chem. Phys. Lett. 303 (1999) 125, which is also cited by Smalley in the Paragraph [0064]). For the same reasons as discussed above, the method of Smalley teaches the recited claim and thus the rejection is remained.

Claims 1-5, 8, 10-12, 14, 16 and 18-19 are rejected as being unpatentable over Glatkowski et al. (US 2003/0122111) in view of Zhang et al. (US 2005/0025694) as discussed above.

Claims 1, 3-5, 6-10, 12-13, 14-17are rejected under 35 U.S.C.103 (a) as being unpatentable over Smalley et al. (US 2002/0046872) in view of Zhang et al. (US 2005/0025694) as discussed above.

Conclusion

.Any inquiry concerning this communication or earlier communications from the examiner should be directed to YUN QIAN whose telephone number is (571)270-5834. The examiner can normally be reached on Monday-Thursday, 10:00am -4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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